SITE ASSESSMENT REPORT
CMC PROPERTIES SITE
FREEPORT, STEPHENSON COUNTY, ILLINOIS

Prepared for:

U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 5 Emergency Response Branch
77 West Jackson Boulevard
Chicago, IL 60604

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October 10, 2006

Mr. Steven Faryan
On-Scene Coordinator
Emergency Response Branch
U.S. Environmental Protection Agency Region 5
77 West Jackson Boulevard
Chicago, IL 60604

Subject: **Site Assessment Report**
CMC Properties site

Dear Mr. Faryan:

TN & Associates, Inc. (TN&A), a member of the STN Environmental Joint Venture with Sullivan International Group, Inc., is submitting the enclosed site assessment report for the Former CMC Lead site in Freeport, Illinois. If you have any questions or comments about the report or need additional copies, please contact me at (312) 220-7000.

Sincerely,

Ronald Bugg
Project Manager

Enclosure

cc: Gail Stanuch, U.S. EPA Project Officer
Raghu Nagam, START Program Manager

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1.0 INTRODUCTION

STN Environmental Joint Venture (STN), the Superfund Technical Assessment and Response Team (START) contractor was tasked by the U.S. Environmental Protection Agency (U.S. EPA) under Technical Direction Document (TDD) No.S06-0606-001 to conduct a site assessment of the CMC Properties site in Freeport, Stephenson County, Illinois. The START was tasked to prepare an health and safety plan, conduct soil sampling, assist with U.S. EPA's X-ray fluorescence (XRF) soil screening, document on-site conditions with written logbook notes and photographs (see Appendix A), procure analytical services, perform analytical data validation (see Appendix B), and prepare a site assessment report. This site assessment report discusses the site background, site assessment activities, analytical results, and potential threats associated with the CMC Properties site.

2.0 BACKGROUND

2.1 SITE DESCRIPTION

The CMC Properties site (site) consists of several parcels of land with the legal description as part of south ½ of the East ½ of the Southeast ¼ of Section 30, Township 27 North, and Range 8 East. The site is located along the west side of the Henderson Road and north of Stephenson Street, in the northern portion of the Freeport city corporate limits. It consists of several abandoned buildings and remains of several foundations.

The site extends west beyond the former Patterson Lumber property, which ceased operations in 2001, along the east bank of the Pecatonica River and to the south of the oxbow. The site terrain has several areas above normal elevation, probably due to backfilling activities. The site elevation is approximately 10 to 15-feet higher on the southern banks when compared to the northern banks of the Oxbow. Areas along the Pecatonica River currently contain a small wetland area between the west side of the site and the river. The site is surrounded by both residential and commercial properties, including a gas station and an abandoned service station (See Figure 1, Site Location Map of Appendix C).

2.2 SITE HISTORY

This site consists of an abandoned railroad and switchyard property and includes a turn table area, a round house and several former loading platforms as indicated by the 1925 Sanborn Maps of the area. Several oil stations and small tank farms operated on the site near the southeast and northeast corners of the site property. Railroad tracks, rails and the tank farm tanks are no longer present on the site. An abandoned concrete block building that served as a service station is located in the southern most portion of the site along Henderson Road. Remnants of several concrete foundations are present scattered throughout the east side of the former railroad tracks.

In February 2002, a Phase I Environmental Site Assessment (ESA) was conducted by Fehr-Graham and Associates for the City of Freeport for the area potential use as a recreational trail. The ESA results did not exclude the possibility of the occurrence of any environmental hazards

associated with the property. Some of the ESA report details are given below:

- Several oil plants historically operated on the eastern portion of property
- A bulk oil plant was identified to have operated in the westernmost parcel of the property
- A mattress factory was identified to have operated in the westernmost parcel of the property
- Underground storage tanks were once identified as being present on the site near 114 N Henderson and the Rip Track Tool house.
- The site is located in the 100-year flood plain

The City of Freeport's contractor conducted a Tier 1 investigation of the site for evaluating future site development. Based on the findings of the Tier 1 investigation and comments from the Illinois Environmental Protection Agency (IEPA), four exposure routes were found to exceed the applicable Tier 1 Residential Remediation Objectives. The exposure routes that required evaluation are the Groundwater Ingestion Exposure Route, Soil Inhalation Exposure Route, Soil Ingestion Exposure Route, and the Soil Component of Groundwater Ingestion Exposure Route based on residential. Presently the property is zoned for heavy industrial, but plans are in the way to be rezoned for recreational use.

3.0 SITE ASSESSMENT ACTIVITIES

Site assessment activities included excavation of test pits, conducting XRF screening survey, global positioning system (GPS) recording of sample locations, and collection of soil samples.

3.1 SITE RECONNAISSANCE

On June 26, 2006, On-Scene-Coordinator (OSC) Steven Faryan, START member, Raghu Nagam and U.S. EPA members Joe Malek, Brian Cooper, Thomas Torne, and Shirley Ng, met with the mayor of the City of Freeport. The City of Freeport was represented by Mayor George Gualrapp, Craig LeBaron, and Sarah Griffin. After the meeting a site reconnaissance was conducted. Bruce Everetts of the IEPA also participated in the site reconnaissance. Site features, areas of concern, accessibility and potential sampling locations were evaluated during this reconnaissance. The site sampling activities were then scheduled for a later date pending the clearance of brushes and utility line layouts.

3.2 SAMPLING ACTIVITIES

On July 24, 2006, OSC Faryan met with START and U.S. EPA Fields Group members Patrick Hamblin and Eric Hilbus at the site to conduct assessment activities. Prior to the site visit, the City of Freeport has cut overgrown brush, cleared pathways for sampling activities and assisted in marking the utility lines, water lines, and sewer lines on the site. START procured analytical laboratory services for sample analysis and an excavation contractor to conduct test pit excavation for sampling by START.

The site assessment activities began with the survey of the outlying areas of the site with the GPS units. The City of Freeport's water department marked the all the water and sewer lines in the area. The Fields Group split into two teams and each team then conducted surface lead surveys with the XRF units. Prior to beginning the survey, the XRF instruments (XRF 700 and XRF 712) were calibrated. Each survey location was marked with a survey flag and then the coordinates were inputted into the GPS system and downloaded onto a survey map. The

information gathered by the XRF instruments used for lead screenings assisted in determining the test pit locations.

On July 25, 2006, Environmental Contractors of Illinois, the test pit excavation subcontractor, mobilized to the site with a John Deere 310 Backhoe equipped with one cubic yard front bucket. The test pit areas were selected based on the elevated lead readings from the XRF instruments and from historically available sample data. The subcontractor excavated 14 test pits throughout the site with the backhoe. The maximum depth of the test pits was 10 feet or until the clay layer was reached by the backhoe.

START collected samples from each of the test pits from 1- to 2-feet intervals. Each sample was identified by the test pit number and depth at which the composite sample was collected. Each sample was collected in a fresh one-gallon plastic zip-lock bag, pre-marked by location and depth. Each plastic bag containing the soil sample was screened for lead with the XRF instrument and the results were recorded in the Fields Group computer. Of the 100 samples collected and screened, 40 samples were selected for laboratory analysis. The fields group downloaded the information and location points of each sample.

In addition to surveying sampling locations, the Fields Group collected multiple elevation data at the site. The elevation information along with the GPS and XRF readings and test pit locations were incorporated in to a database for generating concentration maps of the site, including; XRF screening locations; estimated surface lead concentrations and test pit lead concentrations, and; estimated soil removal area (Appendix C).

A total of 40 samples were selected for laboratory analysis of total lead based on XRF survey results. At least one sample per test pit and all the surface soil samples were selected for Toxicity Characteristic Leaching Procedure (TCLP) analysis of lead. START collected a total of 34 samples for TCLP lead analysis during these site assessment activities. Soil samples collected by START were hand delivered to STAT Analytical Laboratory in Chicago, Illinois on July 25, 2006. The samples verbal turnaround time was 5 business days and hard copy turnaround time of

three weeks for the results.

Additional soil samples were collected on August 30, 2006, by the Fields Group to further delineate XRF survey data. A total of 11 soil samples were collected by the Fields Group for total lead analysis by the laboratory. One of the 11 samples was requested for TCLP lead analysis. Analytical results of all the samples collected at the site and the XRF lead survey data are included in Table 3-1 and Table 3-2.

4.0 ANALYTICAL RESULTS

The laboratory analyzed soil sample results for total lead ranged from 58 to 34,000 milligrams per kilogram (Mg/kg). Six of the 35 soil samples requested for TCLP lead analysis indicated concentrations over 5 milligrams per liter (mg/L). The TCLP lead concentration in six samples ranged from 7.9 to 110 mg/L. Appendix B contains the validated analytical package of all sample data.

5.0 POTENTIAL SITE-RELATED THREATS

The TCLP lead analytical results for soil samples collected by START were compared to maximum concentrations of contaminants pursuant to 40 CFR, Section 261.24, Table 1, "Maximum Concentration of Contaminants for the Toxicity Characteristic." The concentration of TCLP lead in 6 of the 35 samples exceeded the maximum concentration for lead of 5.0 mg/L.

The total lead, which was detected in soil samples at concentrations ranging from 58 to 34,400 mg/kg, can be inhaled as dust and ingested through contaminated foods and contaminated water. Lead can damage the nervous system, kidneys, and reproductive system. Exposure to high levels can result in neurological effects, brittle hair, and deformed nails. Occupational inhalation exposure may cause dizziness, fatigue, irritation of mucous membranes, and respiratory effects.

Based on National Oil and Hazardous Substances Contingency Plan (NCP) Section 300.415, U.S. EPA may take removal action to abate, prevent, minimize, stabilize, mitigate, or eliminate a release or potential release that poses a threat to the public health or welfare of the United States or the environment. Section 300.415(b) (2) of the NCP lists factors to be considered when determining the appropriateness of a removal action. Applicable factors for a potential removal action at the site are discussed below.

Weather conditions that may cause hazardous substances or pollut·.its or contaminants to migrate or be released: Analytical results for soil samples collected dur.ng this investigation showed the presence of elevated concentrations of total lead ranging from 58 to 34,400 mg/kg. The lead TCLP analytical results ranged from 7.9 to 110 mg/L and pose potential leachate migration threats. Surface soils contaminated with lead could potentially be transported via runoff to nearby areas.

Other situations or factors that may pose threats to public health or welfare of the United States or the environment: Considering the fact that this site lies in a 100-year floodplain, the contaminated soil would continue to be susceptible to erosion, particularly during periods of high

water or flood, which could result in negative impacts to the environment. Rainfall could possibly increase the migration of lead from the piles of material. The future intended use for recreational purposes, such as establishing a bike path at the site poses a potential threat of dermal exposure to humans because of high lead levels in surface soils.

Based on the information provided and incorporated from the XRF readings, sample results, and GPS survey of the area, USEPA has developed several maps indicating the extent of contamination and the estimated volume of contaminated material (See Appendix C for site maps).

6.0 SUMMARY

Lead has been detected at specific areas on the northwest side of the property near the wetland area. Several test pit and surface soil sample results revealed elevated total lead concentrations. Six of the 34 TCLP samples had levels greater than 5 mg/L. Based on historical information, XRF surveys, and the site assessment results, lead contamination is present in soil piles and in the material that had been since moved to the northern section of the property. All the test pits were excavated from soil piles located throughout northwest section of the property. The analytical results indicated elevated levels of lead collected from several test pit samples. Based on several XRF screening sample results and test pit laboratory samples, the lead contamination is also present near or at several test pits.

U.S. EPA estimated the extent of contamination based on lead exceedences over 1,000 mg/kg in surface soil samples and in test pit samples collected from various depths. An estimated volume of 14,500 cubic tons of contaminated material would be required to abate threats posed by site contaminants. A removal action is warranted at the specific areas of concern and potential capping of the area for concern, along with land restrictions of the property maybe required to facilitate the spread of contaminated soil and to abate an increase in threats due to future migration of contaminants to the area.

APPENDIX A

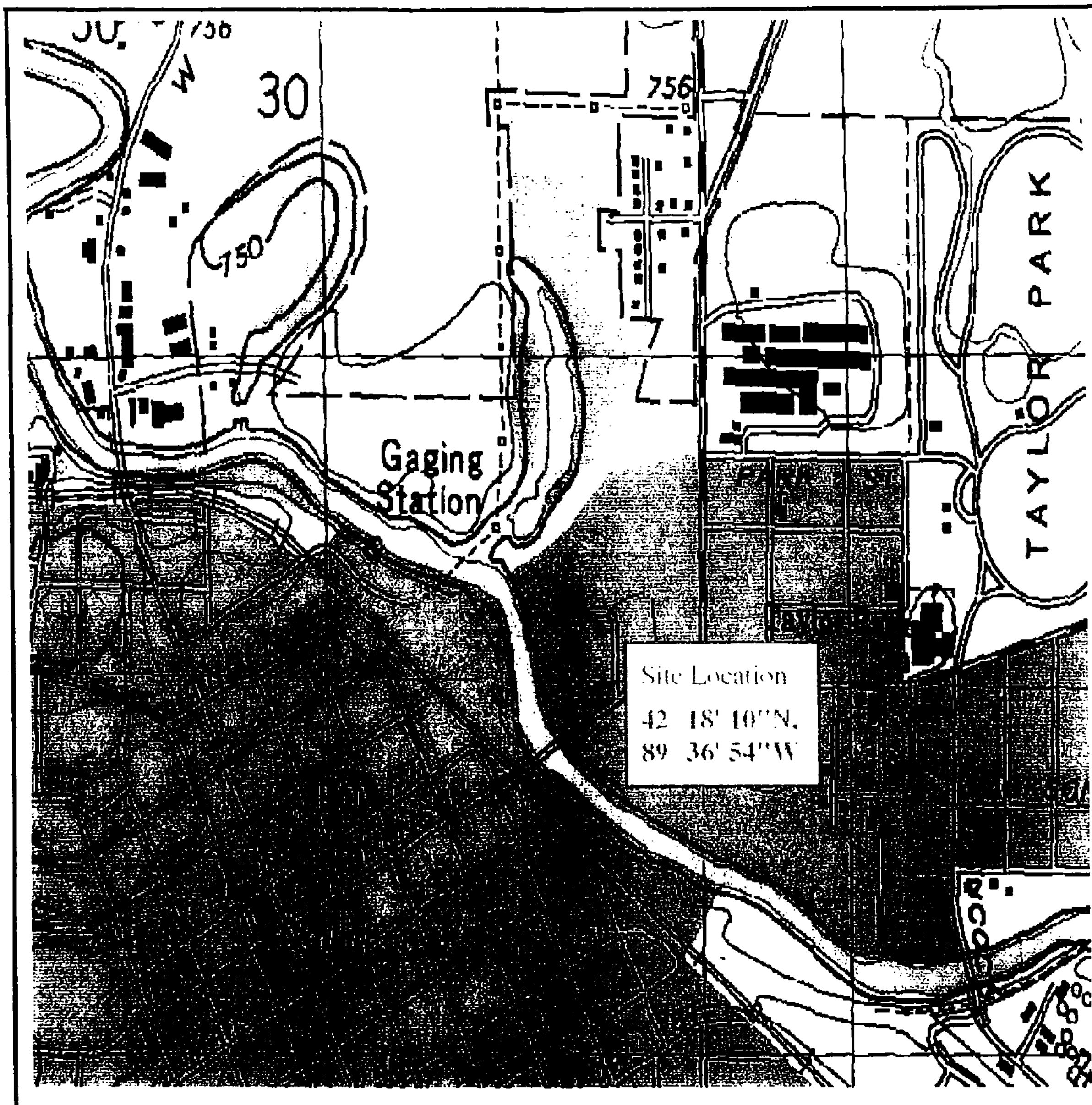
PHOTOGRAPHIC LOG

APPENDIX B

VALIDATED ANALYTICAL DATA PACKAGE

APPENDIX C

SITE MAP



0 .25Mi

NORTH

Source: Modified from USGS Quadrangle Freeport East (IL) Topographic Map, 2000

CMC LEAD SITE
FREEPORT, ILLINOIS

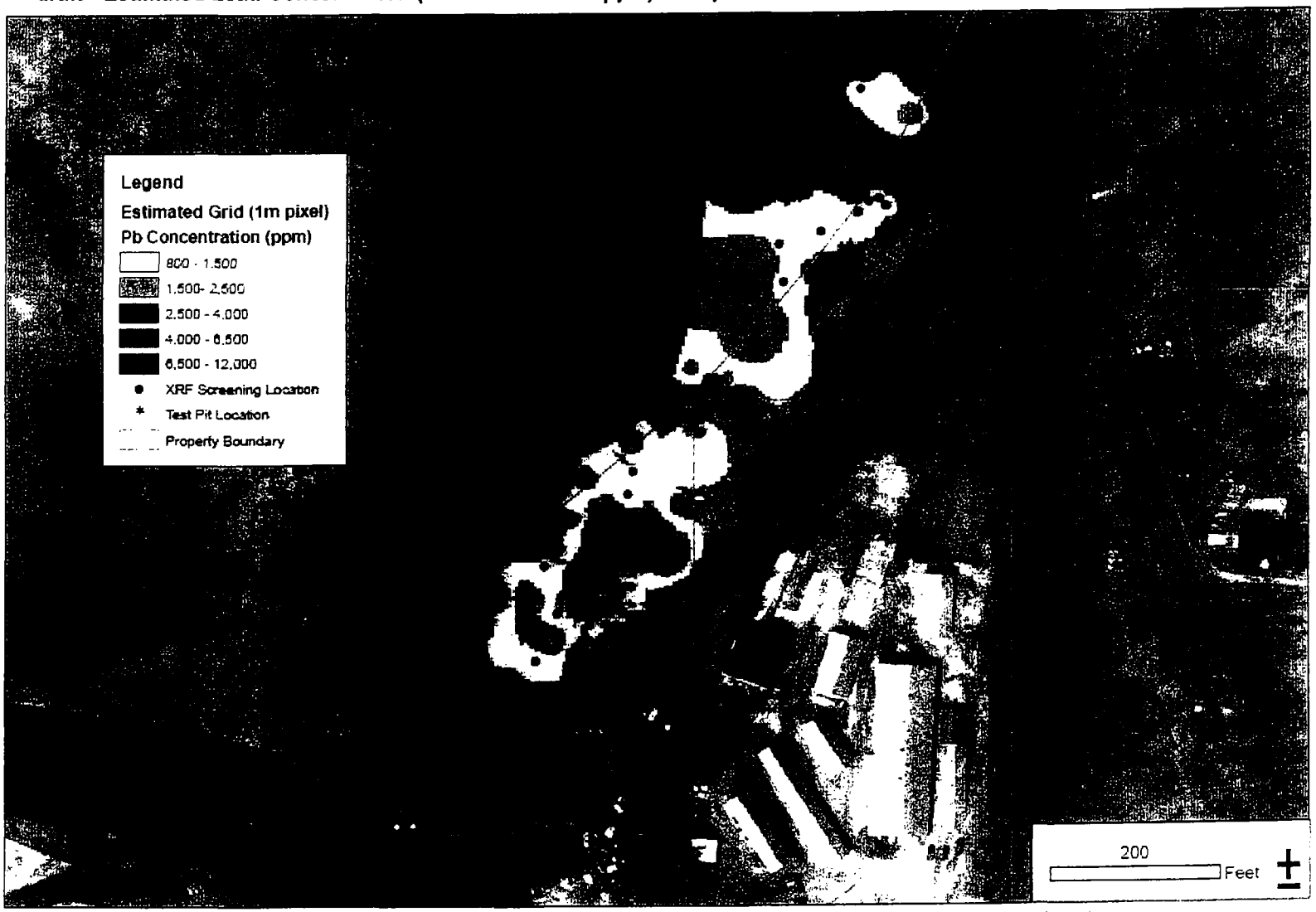
TDD No. S05-0606-001

FIGURE 1

SITE LOCATION MAP

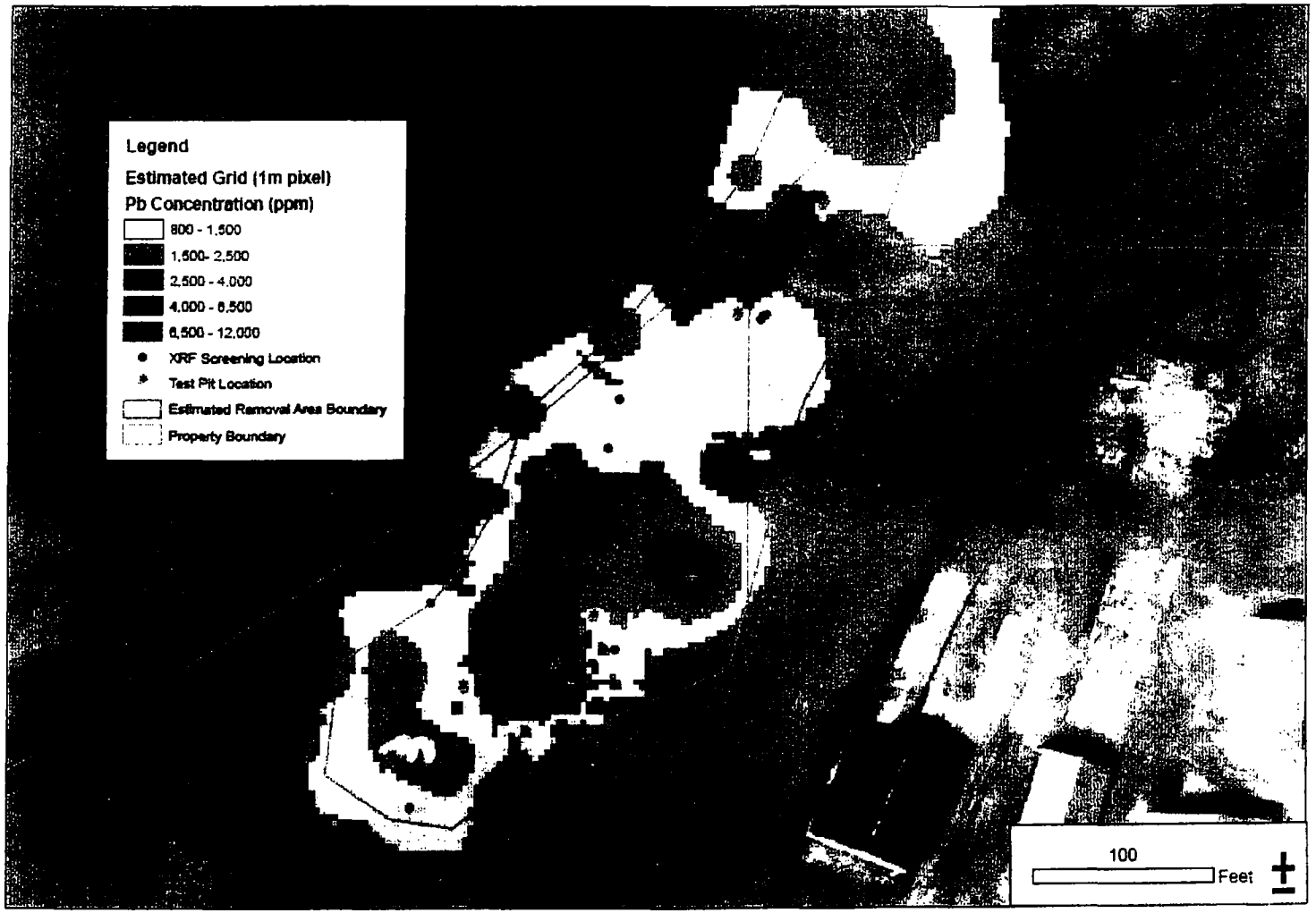
STN Environmental
service disabled veteran owned small business

"draft" Estimated Lead Concentration (Greater Than 800 ppm) at Depth 0 to 2 Feet at CMC Properties in Freeport, IL "draft"



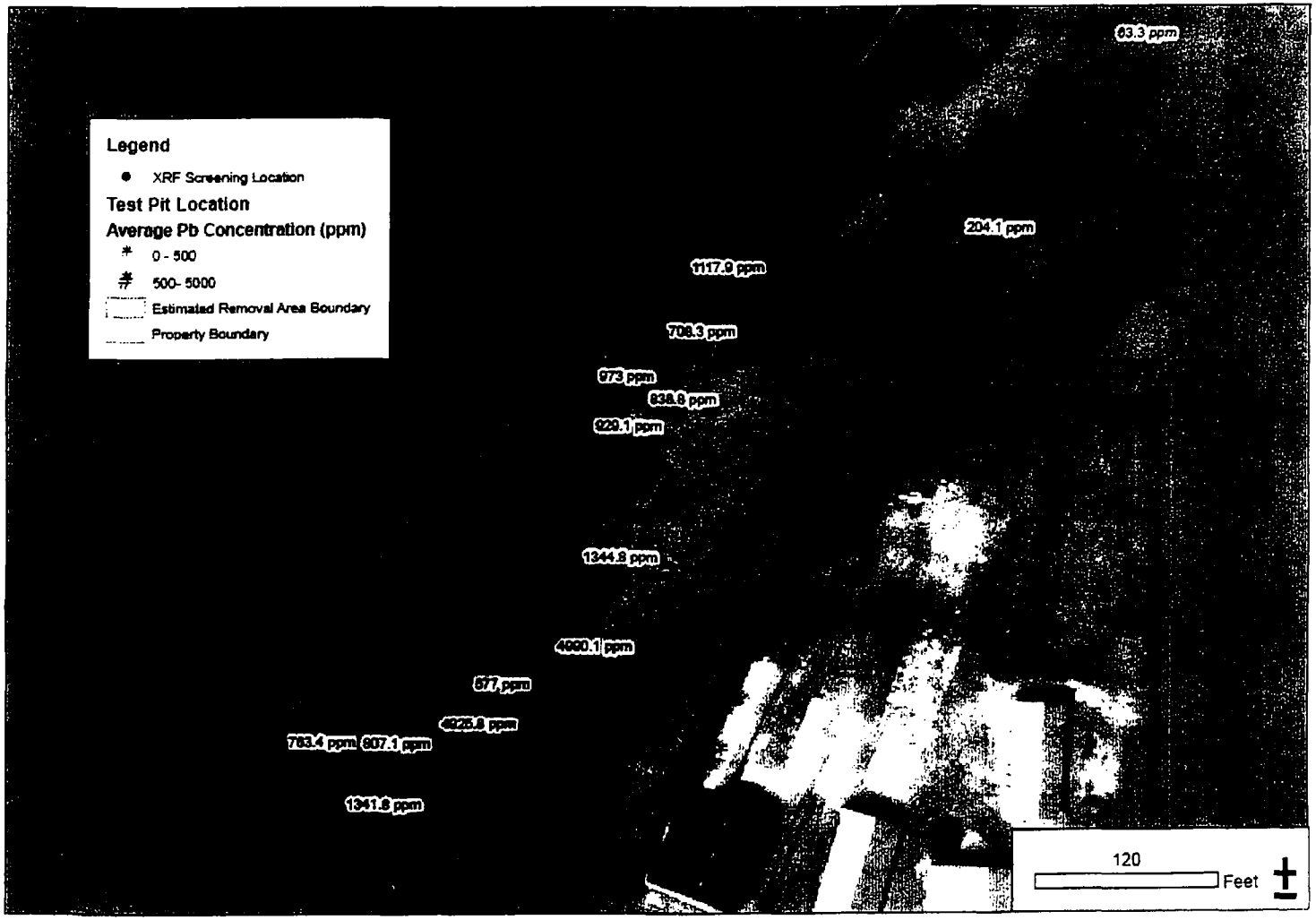
Sources: All XRF and test pit locations determined by GPS on site. Property boundary and aerial image from acquired from Fehr-Graham & Associates, Inc.
The estimated lead concentration surface grid was calculated using an inverse distance weighted interpolation algorithm.
All surface XRF values from 2006 and test and hand pit results between depths of 0 to 2 ft were used in the calculation.
When available, lab results were used for test and hand pit locations in place of XRF results.

draft Estimated Removal Area at CMC Properties in Freeport, IL *draft*



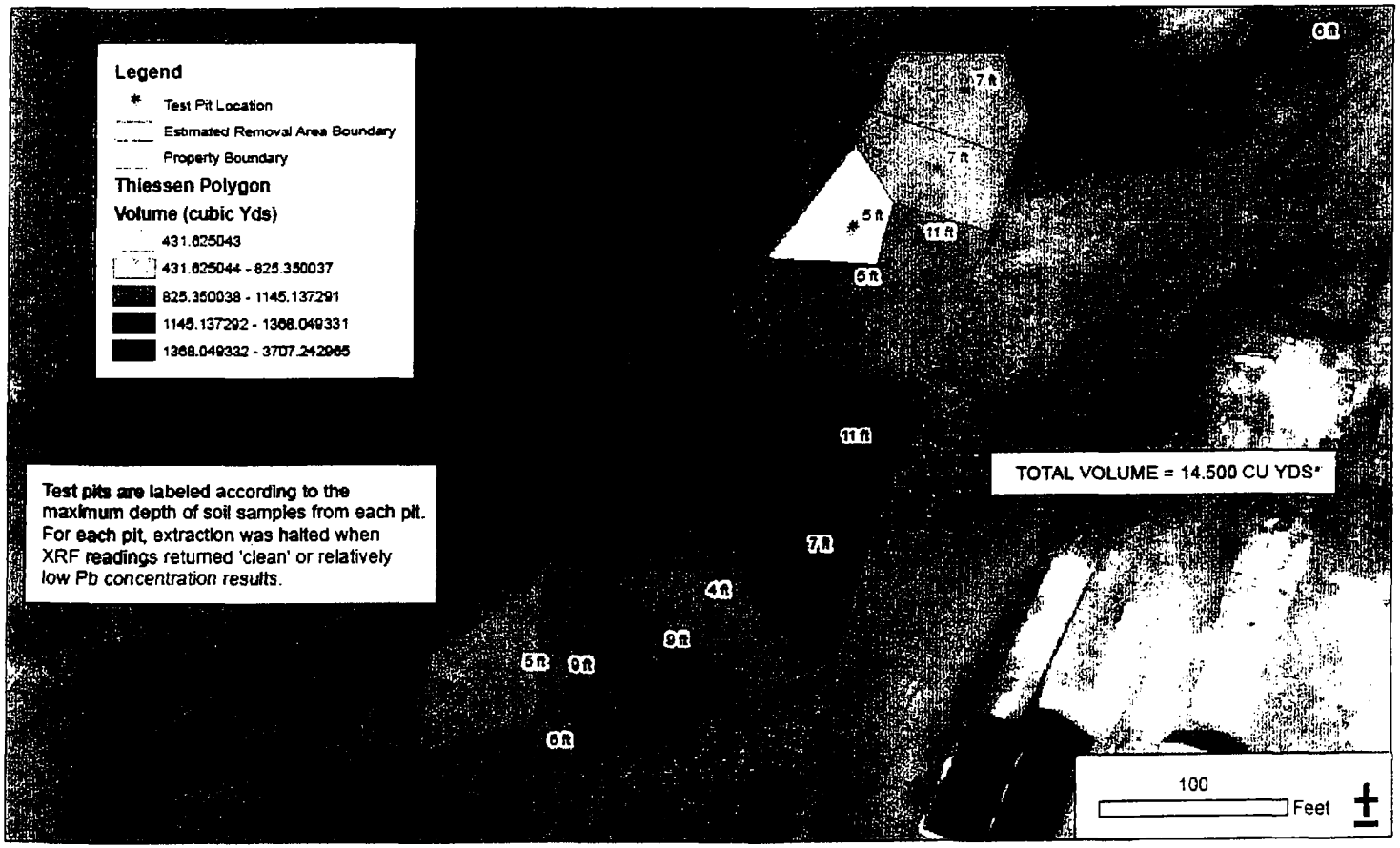
Sources: All XRF and test pit locations determined by GPS on site. Property boundary and aerial image from acquired from Fehr-Graham & Associates, Inc.
Estimated removal area was digitized based on a visual interpretation of the extent of the lead contamination at depth 0 to 2 feet and the locations of the test pits.

draft Average Lead Concentration of All Samples for Each Test Pit at CMC Properties in Freeport, IL *draft*



Sources: All XRF and test pit locations determined by GPS on site. Property boundary and aerial image from acquired from Fehr-Graham & Associates, Inc.
Estimated removal area was digitized based on a visual interpretation of the extent of the lead contamination at depth 0 to 2 feet and the locations of the test pits.

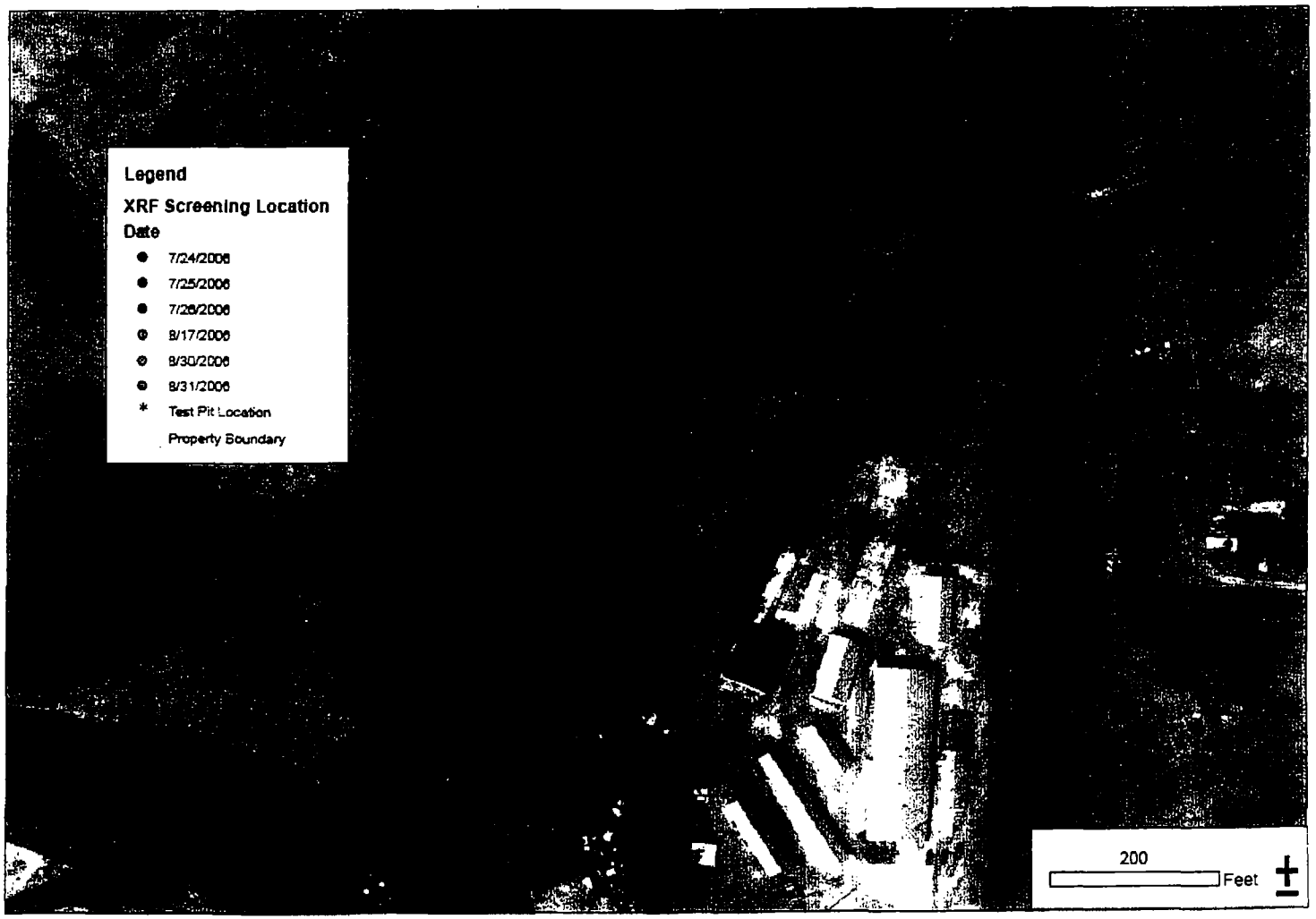
"draft" Max Depth of Test Pits and Calculated Volume of Removal Area in Cubic Yards "draft"



Sources: All XRF and test pit locations determined by GPS on site. Property boundary and aerial image from acquired from Fehr-Graham & Associates, Inc.
Estimated removal area was digitized based on a visual interpretation of the extent of the interpolated lead contamination above 800 ppm at depth 0 to 2 feet and the locations of the test pits

* The total volume is calculated by adding the volume associated with each Thiessen Polygon.
Thiessen Polygons define individual areas of influence around each of a set of points and their boundaries define the area that is closest to each point relative to all other points. Therefore, a Thiessen Polygon is used to represent each test pit. The area of each Polygon was then calculated and multiplied by the maximum depth of the test pit within it to determine a volume for each Polygon. The volume of all Thiessen Polygons was then added together to give a removal volume estimate for the entire area.

draft XRF Screening Locations From July and August 2006 at CMC Properties in Freeport, IL *draft*



Sources: All XRF and test pit locations determined by GPS on site. Property boundary and aerial image from acquired from Fehr-Graham & Associates, Inc
144 XRF and 14 test pit locations were recorded.

TABLE 3-2
ANALYTICAL RESULTS COMPARISION TO XRF RESULTS
CMC PROPERTIES SITE
FREEPORT, STEPHENSON COUNTY, ILLINOIS

Sample ID	Lead, Total (mg/Kg)	Lead, TCLP (mg/L)	XRF Readings (ppm) XLp-712	XRF Readings (ppm) XL-700
TP-1 0-2	12,000	94	4,194	7,010
TP-1 2.5-3.5	15,000	12	4,611.8	2,780
TP-1 4.5-5	540	0	1,195.1	548
TP-2 0-2	1,200	0.66	811.8	448
TP-2	58	0	na	95
TP-2 8-9	780	0	363.6	95
TP-3 0-2	1,500	1.4	903.8	NS
TP-3 1-3	1,100	1.8	738	NS
TP-4 0-2	3,100	0.81	679.9	NS
TP-5 0-2	1,100	1.5	746.7	334
TP-6 0-2	4,000	9.5	1,301.7	1,050
TP-6 4-5	2,600	1.3	742	2,360
TP-6 5-6	13,000	16	9,083.4	6,920
TP-6 6-7	280	0	493.4	358
TP-7 0-2	490	0.27	561.1	342
TP-7 7-9	360	0.012	492.8	180
TP-7 9-10	1,400	0.76	1,779.3	1,610
TP-8 0-2	200	0.017	105	84
TP-8 8-9	1,900	0.54	NS	528
TP-8 7-8	2,600	0.16	2,046.2	1230
TP-8 9-10 DUP	1,000	0.51	533.5	967
TP-8 0-2 DUP	160	0	105	84
TP-9 0-2	490	0.11	341.6	309
TP-9 3-4	1,600	0.61	1,801.7	941
TP-10 0-2	1,300	0.99	378.6	553
TP-11 0-2	2,000	0.73	1,317.7	NS

TABLE 3-2
ANALYTICAL RESULTS COMPARISION TO XRF RESULTS
CMC PROPERTIES SITE
FREEPORT, STEPHENSON COUNTY, ILLINOIS

Sample ID	Lead, Total (mg/Kg)	Lead, TCLP (mg/L)	XRF Readings (ppm) XLp-712	XRF Readings (ppm) XL-700
TP-11 3-5	3,700	0.95	1316	NS
TP-11 5-6	690	0	576.2	NS
TP-12	1,800	0.98	704.8	NS
TP-13	260	0.03	212.2	NS
TP-14	190	0.021	114.2	NS
TP-15	34,000	7.9	9,083	NS
TP-16	3,600	0.41	2,046.2	NS
Lake Sample 01	1,800	0.24	237.7	NS
HP1 0-1	3,500	3.6	1,857.9	NS
HP1 1-2	2,100	2.9	1,957.9	NS
HP2 0-1	2,700	1.7	1,142.5	NS
HP2 1-2	2,500	1.8	1,022.9	NS
HP3 XRF	1,200	0.18	1,224.3	NS
TP6 2-4	22,000	110	5,070.6	NS

Notes:
mg/kg = Milligram per kilogram
mg/L = Milligram per liter
ppm = parts per million
TCLP = Toxicity Characteristic Leaching Procedure
NS = Not screened by XRF instruments
XLp-712 = XRF instrument identification

Analytical services performed by STAT Analytical in Chicago, Illinois under START TDD: S05-0---

TABLE 3-1
SOIL SAMPLE ANALYTICAL RESULTS
CMC PROPERTIES SITE
FREEPORT, STEPHENSON COUNTY, ILLINOIS

Sample ID	Sample Depth (feet)	Lead, Total (mg/Kg)	Lead, TCLP (mg/L)
TP-1 0-2	0-2	12,000	94
TP-1 2.5-3.5	2.5 – 3.5	15,000	12
TP-1 4.5-5	4.5 – 5	540	ND
TP-2 0-2	0 – 2	1,200	0.66
TP-2	2 - 4	58	ND
TP-2 8-9	8 – 9	780	ND
TP-3 0-2	0 - 2	1,500	1.4
TP-3 1-3	1 -3	1,100	1.8
TP-4 0-2	0-2	3,100	0.81
TP-5 0-2	0 - 2	1,100	1.5
TP-6 0-2	0 - 2	4,000	9.5
TP-6 4-5	4 – 5	2,600	1.3
TP-6 5-6	5 – 6	13,000	16
TP-6 6-7	6 – 7	280	ND
TP-7 0-2	0 – 2	490	0.27
TP-7 7-9		360	0.012
TP-7 9-10		1,400	0.76
TP-8 0-2	0 – 2	200	0.017
TP-8 8-9		1,900	0.54
TP-8 7-8		2,600	0.16
TP-8 9-10 DUP		1,000	0.51
TP-8 0-2 DUP	0 – 2	160	0
TP-9 0-2	0 – 2	490	0.11
TP-9 3-4		1,600	0.61
TP-10 0-2	0 – 2	1,300	0.99
TP-11 0-2	0 – 2	2,000	0.73
TP-11 3-5		3,700	0.95

TABLE 3-1 SOIL SAMPLE ANALYTICAL RESULTS CMC PROPERTIES SITE FREEPORT, STEPHENSON COUNTY, ILLINOIS			
Sample ID	**Sample Depth (feet)**	**Lead, Total (mg/Kg)**	**Lead, TCLP (mg/L)**
TP-11 5-6		690	ND
TP-12	0 – 2	1,800	0.98
TP-13	0 – 2	260	0.03
TP-14	0 – 2	190	0.021
TP-15	0 – 2	34,000	7.9
TP-16	0 – 2	3,600	0.41
Lake Sample 01	0 – 2	1,800	0.24
HP1 0-1	0 – 2	3,500	3.6
HP1 1-2	0 – 2	2,100	2.9
HP2 0-1	0 – 1	2,700	1.7
HP2 1-2	1 – 2	2,500	1.8
HP3 XRF	0 – 2	1,200	0.18
TP6 2-4	2 – 4	22,000	110

Notes:
mg/kg = Milligram per kilogram
mg/L = Milligram per liter
ND = Non-detect
TCLP = Toxicity Characteristic Leaching Procedure

Analytical services performed by STAT Analytical in Chicago, Illinois under START TDD: S05-0606-02